

# Transmission characteristics of the coupled 1D photonic crystal

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General photonic crystals, that are made of the bulk material such as dielectrics, can not interact strongly with the other photonic crystals even if they are in contact with the surface of themselves. But a pair of stripline photonic crystal (SPC) [1,2] can couple strongly by placing them closely [3], because the SPC can couple by using their whole crystal. Therefore, we can consider about a strongly coupled system of the photonic crystal. Figure 1 shows the structure of the coupled SPC studied in this paper.

We investigated the transmission and reflection characteristics of the coupled SPC. The transmission characteristics was calculated by using the Method of Moment (MoM). The SPC were made of copper foil embedded in the teflon substrate. Two striplines are not in contact with each other, but it overlaps on a 0.127mm interval at the center of the SPC. Figure 2 shows the simulation result of transmission and reflection characteristics. The solid line (P1-P1) is a reflection spectrum of port 1 (P1). The dashed line (P1-P4) is a transmission spectrum of port 4 (P4). The electromagnetic wave is sent from P1. Peak and dip frequencies of the first band in the transmission correspond to those frequencies in the reflection. Therefore the reflection characteristics (P1-P1) was contained in the transmission spectrum (P1-P4). The numerical analysis and the result of observation will be reported at the presentation.

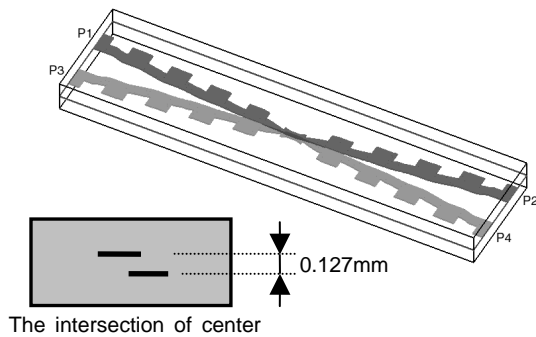


Fig.1. Coupled stripline photonic crystal (SPC).

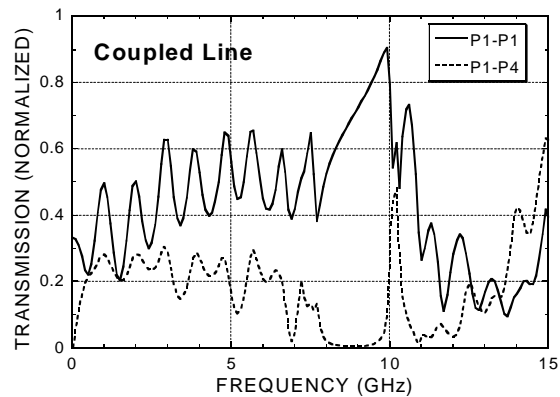


Fig.2. Calculated transmission characteristics of coupled SPC.

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